

## INFORMATION REPORT

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COUNTRY Yugoslavia

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SUBJECT Rade Koncar Electro-Engineering Works

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SUPPLEMENT TO  
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1. Rade Koncar, the largest electro-engineering works in Yugoslavia, em-  
ploying some 4,000 workers and technicians, has evolved from the relatively  
small workshops set up by Siemens in Zagreb before the war for the pur-  
poses of repairing electrical equipment and assembling electrical equip-  
ment imported from Germany.
2. Expansion of these works started in 1946 and is still in progress.  
Two large halls and several smaller buildings have already been built.
3. Most of the capital equipment installed in this factory and most of the  
raw materials in use were supplied by UNRRA in 1946 and 1947.

### Production:

1. First phase, 1946 - late 1948. During this phase, Rade Koncar was only  
able to execute individual orders. Among articles produced were: small  
transformers, miscellaneous electric motors and pumps, and high voltage  
transmission line switches and insulators. Among articles repaired  
were telephone and telephone exchanges.
5. The difficulties experienced are well illustrated in the following  
examples:
  - a. In 1946, Rade Koncar was asked to produce a mobile 10-ton crane  
for another factory. Over a year was spent in constructing this  
crane, and when completed was hailed as a great engineering feat.  
The fact that the crane had been made from old parts cannibalized  
from other machines, et cetera, was, however, carefully concealed  
from the public.
  - b. In 1946 work began on drawing up the technical plans for the con-  
struction of a new generator for the Maribor Otok power station.  
This was the first Yugoslav attempt to construct such a complicated  
piece of electrical equipment. In spring 1948, the generator was  
completed and duly installed. Again, no public mention was made  
of the fact that the generator was, for the most part, constructed  
of second hand parts. The history of the 50X1-HUM  
rotor of this generator is not without interest. Because Rade Koncar

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is not equipped with a foundry, the rotor was cast in Gustanj (Slovenia), then sent to the Zeleznik (Serbia) machine works for finishing, and finally sent to Rade Koncar for assembly. The transportation costs from Gustanj to Zeleznik and from Zeleznik to Rade Koncar amounted to 200,000 dinars.

- c. In 1947, work began on the construction of generators for the Ozalj II and Tribalj power stations but is proceeding slowly. The generators were supposed to be ready some months ago, but Rade Koncar was forced to ask for the delivery date to be postponed until the end of 1950.

6. Second phase, late 1948 - to date:

- a. This phase is characterized by a definite trend towards serial production. Electric motors and transformers are now being produced serially, and the serial production of telephones and turbo-generators is being attempted.
- b. In 1947, Rade Koncar was supposed to switch over from individual to serial production of electric motors. For technical reasons this switch only began towards the end of 1948 with the serial production of smaller type electric motors. In the first half of 1949, the number of types of electric motors serially produced increased until they now include:

1.7 h.p.	220/380 v,	50 Hz,	1300 r.p.m.
2.2 h.p.	220/380 v,	50 Hz,	2800 r.p.m.
4 h.p.	380 v,	50 Hz,	1460 r.p.m. (slip ring motor)
6.2 h.p.	380 v,	50 Hz,	1420 r.p.m.
6.4 h.p.	220/380 v,	50 Hz,	1400 r.p.m.
11 h.p.	380 v,	50 Hz,	1400 r.p.m.
11 h.p.	220/380 v,	50 Hz,	1400 r.p.m. (slip ring motor)
25 h.p.	380 v,	50 Hz,	1380 r.p.m.
32.7 h.p.	220/380 v,	50 Hz,	1450 r.p.m. (slip ring motor)
68 h.p.	220/380 v,	50 Hz,	1420 r.p.m.

Production of these motors is effected in collaboration with other firms. Metal yokes are cast in local Zagreb foundries and finished in the Rade Koncar machine shop; Elka, Zagreb, furnished copper windings, and the Electrode Factory, Sibneik supplied electrodes. However, ball and roller bearing are imported from abroad. In addition to serial production of electric motors, Rade Koncar still accepts special orders: thus, for example, an 800 h.p. electric motor was manufactured in 1948 for the Ivo Lola Ribar factory. Repair of electric motors continues as formerly.

7. The manufacture of transformers began in 1946, but serial production only began in 1948. The following types are now serially produced:
- Three phase, oil cooled, transformer. Rating 1000 kVA, 10,000 plus or minus 4%/400/231 v. 50 Hz.
  - Three phase, oil cooled. Rating 400 kVA.
  - Three phase, oil cooled. Rating 250 kVA.
  - Three phase, oil cooled. Rating 100 kVA.
  - Three phase, oil cooled. Rating 10 kVA.

The raw materials necessary for the production of these transformers are all procured from domestic sources.

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8. The original Siemens telephone assembly and repair shop has been enlarged. In 1945 work was started on the production of an inductor telephone prototype, and it was only fairly late in 1948 that a prototype suitable for serial production was evolved. For the present, this section is principally engaged on the cannibalization of old telephone exchanges, the repair of telephones and telephone exchanges, and the execution of special orders for main telephone exchanges.
9. During 1949, Rade Koncar was supposed to but did not begin serial production of turbo generators for hydro and thermo-electric power stations. However, generators are still built to special order and against long delivery dates.
10. Serial production on a moderate scale has begun on:

- a. Miscellaneous non-automatic high voltage line switches (automatic high voltage line switches are imported

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- b. High and medium voltage power switches.

- c. Transmission line insulators.

Until recently, the kaolin used in manufacturing these switches and insulators was imported from Czechoslovakia.

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